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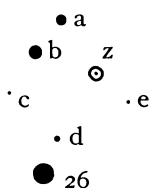
Another interesting expedition was that to *Tiahuanuco* and the sacred islands of Incas, on lake *Titicaca*, which led to results of much archæological interest. Important aid has been rendered to the expedition by many residents in Peru without whose assistance the establishment of the station would have been extremely difficult.

HARVARD COLLEGE OBSERVATORY,
CAMBRIDGE, MASS., February 19, 1892.

ASTRONOMICAL OBSERVATIONS.

Made by TORVALD KÖHL, at Odder, Denmark, in the year 1891.

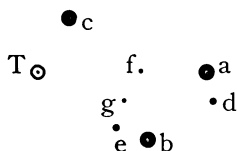
Z Cygni.



The region near the star 26 *Cygni* has been reviewed. December 7, 1890, the star *Z* appeared as bright as *a*, but it very rapidly decreased, so that on

| | |
|------------------|---|
| <i>January</i> | 1 : $Z < c$. |
| " | 6 : id. |
| " | 9 : id. |
| <i>February</i> | 4 : <i>Z</i> invisible in the 3-inch STEINHEIL, power 42. |
| " | 13 : id. |
| " | 27 : id. |
| <i>August</i> | 26 : $Z = b$. |
| " | 30 : id. |
| <i>September</i> | 4 : $a > Z < c$. |
| " | 8 : $Z = c$. |
| " | 23 : $Z < c$. |
| " | 29 : $Z = e$. |
| <i>October</i> | 26 : <i>Z</i> invisible. |
| <i>November</i> | 5 : $Z < e$, extremely faint. |
| " | 28 : id. |

T Ursae Majoris.



This variable has been observed at the following times. On December 7, 1890, the star was invisible, but it must have rapidly grown brighter, the maximum being calculated to fall on February 1, 1891.

| | | |
|------------------|------|---|
| <i>February</i> | 4 : | T a little fainter than a. |
| " | 13 : | a > T > c ; T perhaps a little brighter than b. |
| " | 17 : | id. |
| " | 26 : | id., b almost = c. |
| <i>March</i> | 9 : | id. |
| <i>April</i> | 3 : | T a little fainter than d. |
| <i>September</i> | 10 : | T almost invisible, fainter than g. |
| " | 23 : | e < T < d. |
| " | 24 : | id. |
| " | 29 : | T = d. |
| <i>November</i> | 6 : | T > a. N. B. |
| " | 28 : | T = b. |

In "*Publications A. S. P.*," Vol. III, No. 15, page 101, I directed attention to a little star (15) near 61 *Cygni*, which twenty years ago was seen by Professor RUDOLPH FALB, and at the present time is not brighter than $13\frac{1}{2}$ magnitude. I have often looked out for this little star thinking it might reappear as a star of the 11th magnitude, but without success. Many other parts of constellations, where variable stars were supposed to be situated, have also been reviewed, the region around TYCHO's *Stella nova Cassiopeiae*, for example.

The Solar Eclipse of June 6.

This partial eclipse, which, on account of the bad weather could not be observed at the Observatory of Copenhagen, was seen here in the following phases :

Publications of the

| h. m. s. | | | |
|----------|----|----|---|
| At 5 | 38 | | P. M. (time of Copenhagen), the eclipse begins about in the middle of the N. W. quadrant. |
| 6 | 0 | | " The disc of the moon is crossing the sun's disc in the north point of the latter. |
| 6 | 11 | 15 | " The limb of the moon is touching a large sun-spot in the position $\Delta \alpha = +0.8'$ $\Delta \delta = +6.0'$ |
| 6 | 30 | | " Maximum of the eclipse (0.4). |
| 6 | 47 | 30 | " Emersion of the above named sun-spot. |
| 7 | 0 | | " At this moment only 0.14 of the sun's diameter is darkened. |
| 7 | 14 | | " End of the eclipse. |

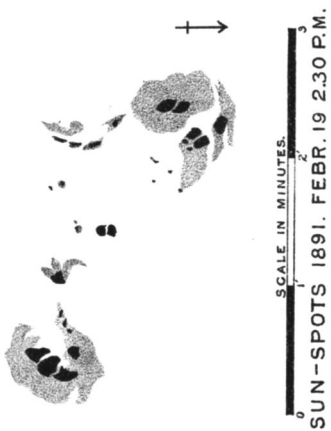
At the middle of the observation the sun's altitude was about 14° , and the limit of the moon therefore was very undulating.

The Lunar Eclipse of November 15.

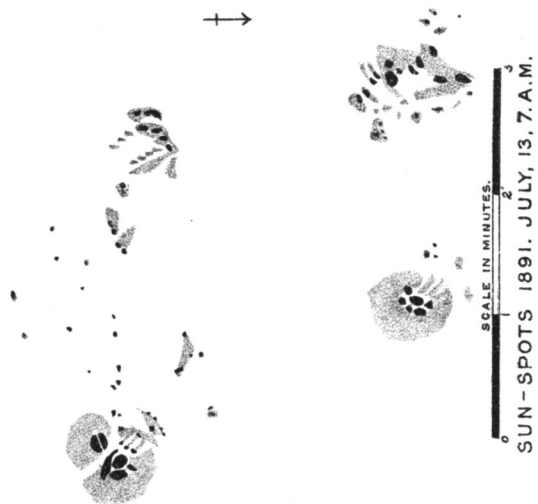
| h. m. s. | | | |
|----------|----|----|--|
| 11 | 25 | | P. M. The shadow is touching the eastern limit of the moon in 22° northern latitude. |
| 11 | 32 | | " The shadow crossing <i>Aristarchus</i> . |
| 11 | 36 | | " The shadow touches the southern wall of <i>Grimaldi</i> . |
| 11 | 44 | | " The shadow through <i>Copernicus</i> . |
| 11 | 45 | | " The shadow through <i>Plato</i> . |
| 11 | 47 | | " The shadow through <i>Archimedes</i> . |
| 11 | 54 | | " The shadow has reached the eastern wall of <i>Aristoteles</i> and <i>Eudoxus</i> . |
| 11 | 59 | | " The shadow crossing <i>Bessel</i> , <i>Menelaus</i> and <i>Thebit</i> . |
| 12 | 4 | | " The shadow is passing <i>Posidonius</i> , <i>Plinius</i> and the eastern wall of <i>Tycho</i> . |
| 12 | 5 | 30 | " The shadow is passing the western wall of <i>Tycho</i> . |
| 12 | 11 | | " The shadow through <i>Proclus</i> and the western wall of <i>Clavius</i> and <i>Theophilus</i> . |
| 12 | 27 | | " Totality of the eclipse. |

No further observations possible, as heavy clouds were crossing the sky.

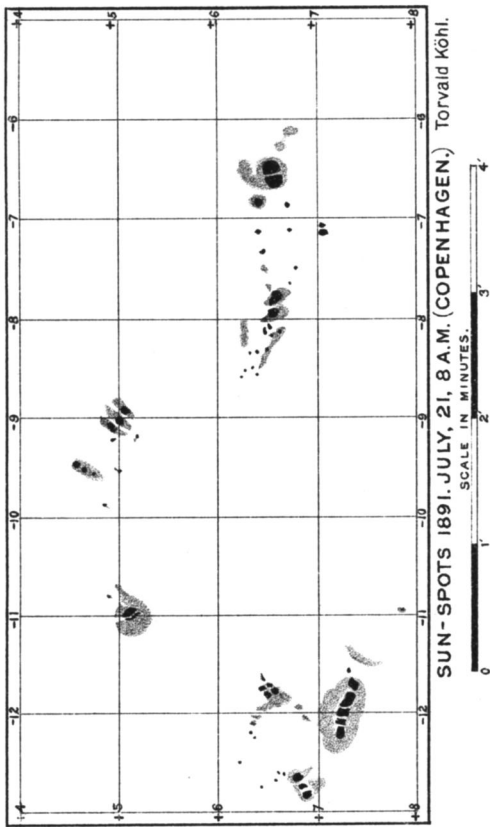
1.



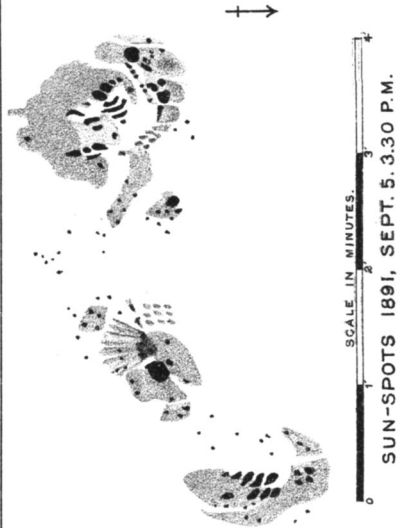
2.



3.



4.



Sun-Spot Observations,

On the following days the sun has been observed :

January 6, 14, 18.

February 9, 12, 13, 15, 16, 17, 18, 19, 24, 26, 27, 28.

March 2, 7, 17, 18, 19, 21, 22, 26, 31.

April 3, 4, 5, 6, 9, 10, 19, 20, 21, 22, 23, 24, 25, 26, 27, 29.

May 2, 3, 4, 5, 6, 8, 10, 11, 12, 13, 14, 15, 18, 19, 23, 24, 25, 27, 28, 29, 30, 31.

June 1, 2, 5, 6, 7, 8, 9, 10, 11, 12, 15, 16, 20, 21, 22, 29, 30.

July 1, 6, 8, 10, 12, 13, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31.

August 1, 3, 5, 6, 7, 8, 9, 10, 12, 15, 16, 17, 19, 21, 22, 24, 26, 28, 29, 30, 31.

September 2, 3, 7, 9, 11, 13, 14, 19, 23, 24, 25, 27, 29, 30.

October 1, 3.

A number of (44) sketches has been made and positions of a great many sun-spots obtained. In fig. 3, the numbers at the edge indicate differences of R. A. and Decl. in parts; the sun's diameter being divided into 40 parts.

Meteors.

| No. | Time. | Beginning. | End. | Magnitude. | Notes. |
|-----|------------------|------------|----------|------------|--------|
| 1 | Feb. 4, 8 6 0 | 167 + 34 | 182 + 36 | 2 | Slow. |
| 2 | Aug. 11, 10 20 0 | 255 + 42 | 272 + 27 | 1 | |
| 3 | " 34 0 | 313 + 30 | 290 + 15 | 1 | |
| 4 | " 38 30 | 262 + 15 | 262 + 5 | 1 | |
| 5 | " 44 0 | 315 + 34 | 300 + 24 | 2 | |
| 6 | " 56 0 | 311 + 37 | 297 + 27 | 2 | |
| 7 | " 58 15 | 354 + 18 | 347 + 7 | 2 | |
| 8 | " 11 2 0 | 338 + 23 | 323 + 10 | 3 | Train. |

Cloudy weather troubled the observations, which were planned in connection with station Copenhagen, on the 9th, 10th and 12th of August. Occasionally, while observing WOLF's comet on September 8, a bright shooting star happened to cross the field at 9^h 50^m. The comet was about 1° S. E. from 64 *Pleiadum*.

In the year 1891 a number of (13) fire-ball observations from different places in Denmark has been registered.